



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,729	10/23/2003	Keith J. Machia	BUR920010164US2 (15016A)	7980
23389	7590	04/19/2004	EXAMINER	
SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA GARDEN CITY, NY 11530			NGUYEN, HUNG	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/691,729	MACHIA ET AL.	
	Examiner	Art Unit	
	Hung Henry V Nguyen	2851	<i>HW</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2003.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 9-19 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 9, 14 and 19 the meaning of “calculating a batch factor by using historical data... at least one lot run previous to a current lot run” is indefinite. It is unclear what type of “historical data” the applicants refer to? The meaning of the “one lot run previous to a current lot run” is not clearly defined.

As to claims 11, and 16, the recitation of “calculating a batch factor of 1 for all lots run subsequent to said step function” is ambiguous and not clearly understood. Please clarify.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 9-11, 14-16 and 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Whiting (U.S.Pat. 6,606,533).

As best the claimed subject matters are understood (see rejection under 35 U.S.C. 112, second paragraph, *supra*). Claims are anticipated by reference.

With respect to claims 9-10, and 19, Whiting discloses a system for controlling exposure dose in a lithographic exposure tool and comprising all basic features of the instant claims such as: means for adjusting the exposure dose as a function of resist sensitivity changes (see col.9, lines 7-16); means for calculating a most recent batch factor by using historical data comprising batch factors and optimum exposure doses from at least one lot run previous to a current lot run (see col.9, lines 1-13); and means for adjusting the exposure dose comprising a value of the exposure dose based on the calculated batch factor whereby the exposure dose in the lithographic exposure tool is controlled properly (see col.9, lines 38-55).

As to claims 10-11, Whiting teaches means for adjusting the exposure does comprises using the exposure doses form the historical data (see col.10, lines 15-20; see figure 5).

With respect to claims 14-16 and 18, the claimed computer program product is seen to be inherent teaching in existence of the above system and must be present for the system to function as intended.

5. Claims 9-10, are rejected under 35 U.S.C. 102(b) as being anticipated by Yoon et al (U.S.Pat. 5,338,630).

With respect to claims 1-2, Yoon discloses a system for controlling exposure dose in a lithographic system comprising all of the limitations of the instant claims including: means for

Art Unit: 2851

changing the exposure dose as a function of resist sensitivities changes (see fig.6; see col.1, lines 43-52 and abstract); and means for calculating a batch data by using historical data/initial set of exposure control parameters and the exposure dose is adjusted based on the calculated batch factor (see col.2, lines 35-39) where in the historical data including all variable data which could affect the exposure of a mask pattern such as: each new mask layer or each new batch of wafers, temperature of lens or barometric pressure of lens etc...(see col.6, lines 59).

As to claim 13, Whiting further teaches a means for applying an aging factor for compensating of an ambient temperature of the resist being applied to the calculated batch factor and exposure dose for increasing the accuracy of the calculated batch factor (see col.1, lines 60 thru col.2 line 7).

As to claims 14-15, the claimed computer program product is seen to be inherent teaching in existence of the above system and must be present for the system to function as intended.

6. Claims 9-10, 14-15 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Mack (U.S.Pat. 5,363,171)

With respect to claims 9-10, 14-15, and 18-19, Mack disclosed a system for controlling photo exposure dose in a lithographic system including means for adjusting the exposure dose as a function of resist sensitivity changes, means for calculating a batch factor by using historic data/previous exposure data/feedback loop and adjusting the exposure dose in accordance with the calculated batch factor (see abstract).

Art Unit: 2851

As to claims 14-15, the claimed computer program product is seen to be inherent teaching in existence of the above system and must be present for the system to function as intended.

Allowable Subject Matter

7. Claims 12 and 17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record either alone or in combination, neither discloses nor makes obvious the combination of a system for controlling exposure dose in a lithographic exposure tool where means for obtaining the calculated batch factor, means for calculating a previous and a next lot run mixing factor, are provided with specific functions, along with the other features, as recited in the instant claims of the present invention.

Prior Art Made of Record

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Maede (U.S.Pat. 5,626,782) discloses a system having means for evaluating and calculating the changes of linewidth; Ausschitt et al (U.S.Pat. 5,953,128) discloses a system of adjusting an exposure tool subsequent to the measuring of the dimension of a developed image on a semiconductor substrate.

Art Unit: 2851

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 571-272-2112. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Hung Henry V Nguyen
Primary Examiner
Art Unit 2851

hvn
4/13/04